REMARKS

Administrative Overview

Applicants hereby amend claims 1 and 17 as indicated in the Listing of Claims set forth above. Support for these amendments can be found in the specification as originally filed, and at least at paragraphs [0025]-[0030] and [0035]-[0041], and in FIGS. 2A and 3. Applicants hereby add new claims 22 and 23. Support for these claims can be found in the specification as originally filed, and at least at paragraphs [0035]-[0036] and in FIG. 2A. No new matter is added thereby. Claims 1, 3-17, 19-20, and 22-23 are now pending in this application and are presented for reconsideration.

In the Office action mailed on September 11, 2008, claims 1, 3-17, and 19-20 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claims 1, 3, and 5-11 were rejected under 35 U.S.C. §103(a) as unpatentable over Berthold *et al.* (Sensors and Actuators 82, 224-228, (2000)) (hereinafter "Berthold") in view of International Application No. PCT/JP03/00570 to Fukushima *et al.* (hereinafter "Fukushima").

Claim 4 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima, further in view of Sarro (Sensors and Actuators A: Physical, 82(1), pp. 210-218, (2000)) (hereinafter "Sarro").

Claim 12 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima, further in view of Applicants' disclosure (Paragraph [0026]).

Claims 13, 14, 15, 17, 19, and 20 were rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima, further in view of the combined teachings of U.S. Patent No. 6,550,337 to Wagner *et al.* (hereinafter "Wagner"), Sarro, Schmidt (Proceedings of the IEEE, 86(6), 1575-1585, (1998)) (hereinafter "Schmidt"), and Lee *et al.* (J. Vac. Sci. Tech. B 12(6), 3425-3430, (1994)) (hereinafter "Lee").

Finally, claim 16 was rejected under 35 U.S.C. §103(a) as unpatentable over Berthold and Fukushima.

For the reasons that follow, Applicants respectfully submit that the claims, as amended, are patentable over these references. Therefore, Applicants request reconsideration and withdrawal of the rejections.

Claim Rejection Under 35 U.S.C. § 112

Claims 1, 3-17, and 19-20 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. More specifically, the Office action states that the specification as originally filed does not provide support for the presently claimed "*single material first substrate*" or the claimed "*single material device package*." Applicants respectfully traverse this rejection as applied to the claims, as amended.

It is well established that exact terms from the specification need not be used *in haec verba* to satisfy the written description requirement of the first paragraph of 35 U.S.C. §112. *See* MPEP §1302.01, citing *Eiselstein v. Frank*, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995) and *In re Wertheim*, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976). See also 37 CFR §1.121(e), which merely requires substantial correspondence between the language of the claims and the language of the specification.

Furthermore, an applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole. In fact, drawings alone may provide a 'written description' of an invention as required by §112. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1565, 19 USPQ2d 1111, 1118 (CAFC 1991); MPEP §2163.

Applicants respectfully submit that the specification conveys to one skilled in the art that the first substrate and device package, as claimed, may be formed from a "*single material*." In particular, Applicants' specification repeatedly and consistently describes the first substrate as including **a** material and being, for example, **a** polycrystalline SiC layer. For instance, paragraphs [0025]-[0028] of the specification, as filed, state:

> The method 100 includes providing **a first material** including a glass (Step 110), providing **a second material** having an elastic modulus greater than the elastic modulus of silicon … and applying a voltage between the first and second materials to cause effective anodic bonding … that attaches the first material to the second material with satisfactory reliability under handling and use conditions.

> ...**The second material** may be, for example, a portion of the completed device, or may be a portion of a package. [Emphasis added].

In addition, FIGS. 2A and 3 of the application as filed clearly and unequivocally show a single, unitary polycrystalline SiC layer (220) and polycrystalline SiC substrate (320) that comprises only one single material. Finally, the specification is completely silent on the use of any first substrate or device package that is formed from anything other than **a** single material.

In addition, claims 1 and 17 have been amended to recite that a second surface of the first substrate/package "*substantially opposite the first surface is exposed following the anodic bonding*." Applicants respectfully submit that at least FIGS. 2A and 3 of the application as filed, in accordance with MPEP §1302.01 and MPEP §2163, clearly and unequivocally show a second surface of the first substrate/package that is exposed following the anodic bonding process. Applicants, therefore, respectfully submit that FIGS. 2A and 3, both alone and in combination with the originally-filed specification at, for example, paragraphs [0025]-[0030] and [0035]-[0041], clearly convey to one skilled in the art that the second surface of the first substrate/package, substantially opposite the first surface, is exposed following anodic bonding.

Applicants, therefore, request reconsideration and withdrawal of the rejection of claims 1, 3-17, and 19-20 under 35 U.S.C. §112, first paragraph.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3, and 5-11 were rejected as unpatentable over Berthold in view of Fukushima.

Applicants' amended independent claim 1 recites a method for anodic bonding at least a portion of a MEMS device that includes a first layer and "*a single material first substrate having an elastic modulus greater than about 300 gigaPascals*." As also recited in claim 1, a first surface of the first substrate is anodically bonded to the first layer and "*a second surface of the first substrate substantially opposite the first surface is exposed following the anodic bonding*."

Berthold, by contrast, does not teach or suggest "*a single material first substrate having an elastic modulus greater than about 300 gigaPascals*" that has a second surface substantially opposite a first bonding surface and that is "*exposed following the anodic bonding*." Rather, the relevant structure taught in Berthold includes a thin film of, for example, silicon carbide, which has an elastic modulus of 430 gigaPascals (Office action at page 5, table 2) and is deposited on a glass wafer. This thin film provides a coating for the glass wafer to assist in the bonding of that glass wafer to another glass wafer. As such, upon bonding, the thin film (i.e., the only material of Berthold's structure that has an elastic modulus greater than about 300 gigaPascals, or even than about 150 gigaPascals) is located between the two glass wafers. Therefore, the thin film does not include a second surface substantially opposite a first bonding surface that is "*exposed following the anodic bonding*." See, for example, Fig. 1 of Berthold.

Applicants respectfully submit that Fukushima fails to cure these deficiencies of Berthold. Specifically, Fukushima appears to describe a method of manufacturing a hermetic seal package. Fukushima does not, however, teach or suggest anodically bonding "*a first layer comprising a glass*" directly to "*a single material first substrate having an elastic modulus greater than about 300 gigaPascals*," as recited in Applicants' amended independent claim 1. In addition, Fukushima does not teach or suggest that a second surface of the first substrate substantially opposite a first bonding surface is "*exposed following the anodic bonding*," as also recited in Applicants' amended independent claim 1. Applicants, therefore, respectfully submit that neither Berthold nor Fukushima, alone or in proper combination, teaches or suggests every element of Applicants' amended independent claim 1.

Because claims 3 and 5-11 depend, either directly or indirectly, from amended independent claim 1, and include all of the limitations thereof, Applicants respectfully submit that these claims are allowable as well. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 3, and 5-11 under 35 U.S.C. §103(a) as being unpatentable over Berthold in view of Fukushima.

Claim 16 was rejected over Berthold and Fukushima as applied to claim 1. However, as claim 16 incorporates all the limitations of Applicants' amended independent claim 1, it too is patentable over Berthold and Fukushima for at least the same reasons as discussed above with respect to Applicants' amended independent claim 1.

Claim 4 was rejected as unpatentable over Berthold and Fukushima, and further in view of Sarro. Claim 12 was rejected over Berthold and Fukushima, and further in view of Applicants' disclosure (Paragraph [0026]). Claims 13, 14, 15, 19, and 20 were rejected over

Berthold and Fukushima, and further in view of the combined teachings of Wagner, Sarro, Schmidt, and Lee.

Each of these rejections relate to claims that depend from amended independent claim 1. Applicants respectfully submit, however, that none of Wagner, Sarro, Schmidt, and Lee, either alone or in proper combination, teaches or suggests anodically bonding "*a first layer comprising a glass*" directly to "*a single material first substrate having an elastic modulus greater than about 300 gigaPascals*" so that a second surface of the first substrate substantially opposite a first bonding surface is "*exposed following the anodic bonding*," as recited in Applicants' amended independent claim 1. Accordingly, neither Wagner, Sarro, Schmidt, nor Lee cure the deficiencies of Berthold and Fukushima with respect to amended independent claim 1. Moreover, paragraph [0026] of Applicants' specification is not prior art to Applicants' independent claim 1. Thus, because claims 4, 12-15, 19, and 20 depend, either directly or indirectly from amended independent claim 1, and include all of the limitations thereof, Applicants respectfully submit that they are allowable as well.

In addition, with respect to claim 12, the Examiner argues, at pages 8-9 of the Office action, that:

> Given applicants disclosure that the bond is "effective with or without prior surface treatment," said surface treatment is understood to produce no unexpected result in the properties of the bond. Since the hydrophobic surface treatment provides no unexpected results in the bonding process over untreated surfaces, the immediate claim limitation wherein the method of claim 1 "further comprises causing the surface of the second material to be hydrophobic" is deemed *prima facie* obvious over the prior art.

Applicants respectfully disagree. First, the statement, in paragraph [0026] of the specification, that "[a]n effective bond may be formed with or without prior surface treatments" does not constitute an admission by Applicants that the application of a hydrophobic surface does not produce an unexpected result over the prior art.

Moreover, as stated in MPEP § 2142, "[t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made … **Knowledge of applicant's disclosure must be put aside in reaching this**

determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention … However, impermissible hindsight must be avoided and the legal conclusion must be reached **on the basis of the facts gleaned from the prior art.**" [Emphasis added].

As such, before an Examiner can make a determination that a claim limitation provides no unexpected results over the prior art, the Examiner must first produce facts gleaned from the prior art that renders that limitation obvious. Applicants respectfully submit that, because paragraph [0026] of Applicants' specification is not prior art to Applicants' claims, and as the Examiner has not, in fact, provided any prior art showing a method of anodic bonding at least a portion of a MEMS device that includes causing the first surface of the first substrate to be hydrophobic, the rejection of dependent claim 12 under 35 U.S.C. §103(a) as being unpatentable over Berthold and Fukushima, and further in view of Applicants' disclosure (Paragraph [0026]), is improper.

Finally, claim 17 was rejected over Berthold and Fukushima, and further in view of Wagner, Sarro, Schmidt, and Lee.

Applicants' amended independent claim 17 recites "*a MEMS component comprising a glass layer*" and "*a single material device package having an elastic modulus greater than about 150 gigaPascals, formed from polycrystalline silicon carbide.*" As also recited in claim 17, a first surface of the package is anodically bonded to the glass layer and "*a second surface of the package substantially opposite the first surface is exposed following the anodic bonding.*" In contrast, as discussed above, none of the cited references applied against claim 17, either alone or in proper combination, teaches or suggests anodically bonding "*a glass layer*" directly to "*a single material device package having an elastic modulus greater than about 150 gigaPascals*" so that a second surface of the package substantially opposite a first bonding surface is "*exposed following the anodic bonding.*"

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 17 under 35 U.S.C. §103(a).

New Claims 22 and 23

With this Amendment and Response, Applicants hereby add new claims 22 and 23. Claims 22 and 23 depend directly from amended independent claims 1 and 17, respectively. As such, Applicants respectfully submit that claims 22 and 23 are patentable for at least the reasons discussed hereinabove with respect to claims 1 and 17.

CONCLUSION

Applicants respectfully submit that, in light of the foregoing amendments and remarks, all of the pending claims are in condition for allowance. Accordingly, the Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and the allowance of the pending claims in due course.

If, in the Examiner's opinion, a telephonic interview would expedite the favorable prosecution of the present application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,

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